

## HAIR CLIP

### Cross Reference to Related Application

[0001] This application is a continuation of International Patent Application Number PCT/GB00/04214, filed November 3, 2000. The entire contents of the prior application is incorporated herein by reference.

### Background of the Invention

[0002] The present invention relates to hair dressing and hair fashion, and in particular, to a hair clip that comprises a plurality of fingers.

[0003] Historically, hair grips and clips have been available in many different forms, ranging from a simple length of shaped spring wire bent double, to clips consisting of two parts held closed by spring action. When placed in the hair, such hair clips are suitable for holding the hair in a certain configuration. Generally, however, they suffer from the problem that they are not capable of holding a plurality of strands or bunches of hair and they are only capable of holding hair over a narrow distance on the head.

[0004] A further disadvantage of known hair clips is that they are not capable of gripping the hair, propping it up and promoting it to stand away from the head adjacent the hair roots, while allowing the loose ends of the hair to fall naturally.

[0005] Therefore, a need exists for a new hair clip that addresses the problems associated with known hair clips. In particular, it would be desirable to provide a hair clip that holds a person's hair over a wider distance than known hair clips; that holds the hair propped up away from the head, adjacent the scalp, while allowing the ends of the hair to fall freely; and that provides an attractive alternative to known hair clips. The present invention provides each of these desirable features.

### Summary of the Invention

[0006] Remarkably, it has now been found that a clip having a plurality of fingers adjacent each other, and which are tensioned to grip hair between the fingers, is more likely to hold more than one bunch of hair; is more likely to be able to hold the hair over a wide distance across the head; and is more likely to hold the hair away from the head adjacent the roots of the hair. The design of a new clip has resulted from a desire to hold not one, but many separate strands of hair over a wider distance across the head than is possible with normal known clips, and to encourage the hair to stand away from the head before falling down naturally.

[0007] Within the context of the description that follows, “comprises” is intended to mean “includes, among other things”, and is not intended to be construed as “consists only of”.

[0008] The present invention provides a hair clip that comprises a plurality of fingers, each finger having a first or tip end and a second or base end; and a tensioning means; wherein the fingers lie adjacent each other side by side in a single plane; each finger is linked to an adjacent finger by a hinge means such that the tip ends of the fingers may be opened or closed with respect to each other; and the tensioning means biases the tip ends of the fingers in a closed position.

[0009] Advantageously, an embodiment of a hair clip according to the invention mimics the action of a hand running through the hair, gripping the hair between the fingers and holding the hair in the form of shower or spray away from the scalp. Preferably, a hinge means links each finger to its adjacent finger(s).

[0010] Preferably, an embodiment of a hair clip according to the present invention will have fingers linked together side by side, by an interlocking key and slot arrangement, thereby forming a multiple fingered clip. Advantageously, the key and slot arrangement ensures that the fingers, when assembled, neither rotate nor slide in any direction relative to each other, *i.e.*, the fingers are inhibited from moving relative to each other in any direction except the desired scissor type movement.

[0011] Preferably, an embodiment of a hair clip according to the present invention has fingers that are held together by a tensioning means, comprising a tension spring having two ends. More preferably, the tension spring is anchored at both of its ends to the outermost fingers. The tensioning means causes the fingers to close and grip firmly whatever is positioned between the fingers, *e.g.*, strands of hair.

[0012] Most preferably, the spring is positioned in a tunnel formed from openings defined in each adjacent intermediate finger. In this manner, the tension spring will preferably pass through the tunnel and be anchored at each end to one of the outermost fingers.

[0013] In one such embodiment, the tensioning means comprises a length of elastic material, such as, for example, a rubber band. In yet another embodiment, the tensioning means includes a rubber bungee inserted through the intermediate fingers and secured at the ends of the bungee to the outermost fingers or to a stout rubber band or other elastic device, positioned around the outside of all of the fingers, just forward of a pivot point. In a preferred embodiment, the elastic device passes through a recessed slot on the underside of the clip, reducing the chance of hair getting caught or tangled in the elastic.

[0014] These tensioning means provide the advantage of allowing a user to assemble the hair clip in various different configurations, comprising a varying number and/or color of fingers, and allowing easy replacement of the tensioning means if snapped.

[0015] Preferably, each intermediate finger includes an opening extending therethrough, proximate the second end, through which a tension spring is positioned and then secured at the ends of the spring to the outermost fingers. In a preferred embodiment, the spring is coated, for example, in a plastic or similar material, or is enclosed in a tube, preferably formed of a plastic or similar material. In addition, preferably gaps where the spring is exposed are minimized by optimising the spring design. Advantageously, this will minimize the chance of hair getting tangled in the spring wire when the spring is extended.

[0016] Preferably, the openings through which the spring passes, are located just a little forward of the hinge pivot. Preferably, the spring has a small outside diameter, more preferably 5mm or less, and it provides adequate but not excessive tension with little stretch. An advantage of a low stretch spring is that it minimizes the chance of hair being caught in the exposed spring coils when the spring is stretched. The spring ends are preferably of the open hook type.

[0017] The end of the tensioning means may be anchored by a peg, which is positioned for example, inside a recess in each outside finger. Preferably, the peg is of a size that accommodates a hook at the end of the tensioning means and the recess allows the hook to pass behind the peg before being anchored to the peg. Preferably, the peg is inserted through the eye of a tensioning means, *e.g.*, a spring, during assembly of the hair clip.

[0018] In another embodiment, the end of the tensioning means may be anchored by a disk, which may, for example, be positioned inside a recess in each outermost finger. Preferably, a slot through the disk extends radially to the disc, through the longitudinal axis of the disk and has an end just beyond the longitudinal axis of the disk. Preferably a spring wire tensioning means is anchored by the disk and the slot has a sufficient width to receive the diameter of the spring wire. Preferably, a channel through the disk parallel to the longitudinal axis of the disk is positioned between the end of the slot and the edge of the disk. Preferably, the diameter of the channel is sufficient to accommodate a spring wire.

[0019] In use, a hook formed in the spring wire is looped through the slot and the channel, and the end of the spring wire is positioned adjacent the channel. Preferably, the disk is manufactured of a metal material, such as, for example, steel, which provides the advantage that it can be machined without difficulty.

[0020] In a preferred embodiment, a tensioning means is incorporated into each key such that when the key is inserted into a slot, an attempt to open the fingers of the hair clip meets resistance and a tendency to return the fingers of the hair clip to the closed position.

[0021] Yet another tensioning arrangement comprises a leaf or torsion spring positioned between a pair of fingers, adjacent a hinge between the fingers, between the hinge and the second end of the fingers. A pivot rod is secured through a pivot provided by the hinge and prevents the fingers from separating.

[0022] Preferably, an embodiment of a hair clip according to the invention has fingers wherein the overall shape of each finger is such that at least one surface of the assembled clip accords to a section of the outside surface of a sphere approximating the dimensions of an adult human cranium. More preferably, the underside of the assembled clip conforms to a section of the surface of a sphere of dimensions approximating the size of a human cranium. Preferably the sphere has a diameter of about 250mm to about 350mm, more preferably about 300mm.

[0023] Tests have shown that if the hair clip has a flat base, it does not sit well on the head. Accordingly, the spheroid underside of the hair clip of the present invention enables the clip to sit snugly against the scalp. Preferably the spheroid has a diameter of 300mm, being roughly the size of an adult human head. Preferably the base of each individual finger between each of its ends is curved and lies on the surface of the spheroid and the base of each finger between each of its sides is curved and lies on the surface of the spheroid. Preferably the sides of each finger extend radially from the circumference of a spheroid of diameter 300mm, which advantageously enables each finger, when placed next to an adjacent finger, to lie on the surface of a 300mm diameter spheroid.

[0024] While if enough fingers are used, they could, in theory, form a complete annulus, a clip of the present invention will preferably comprise up to about twelve fingers. This provides a hair clip that is as wide as would typically be practical.

[0025] Preferably, an embodiment of a hair clip according to the invention has fingers having sides that comprise a plurality of projections. Preferably the side surfaces comprise a plurality of interlocking projections and/or indents. Preferably, there are at least two projections

and/or indents on each finger, and more preferably there are at least three. The projections and/or indents provide the advantage that they grip hair. It will be appreciated that the projections could be of any cross section. For example, the projections could comprise mounds or cylinders of circular, elliptical, triangular, rectangular, square or other polygon cross section. In a preferred embodiment the indents are shaped to receive a corresponding projection on an adjacent finger.

**[0026]** In a further embodiment, the projections and/or indents are provided by undulations in the side surfaces of each finger. Preferably, the undulations extend between the first end and the second end of at least one finger. Alternatively, or in addition, the undulations extend between the top and the base of at least one finger. More preferably, the undulations are provided on the side surfaces of at least the intermediate fingers. Most preferably, the undulations are provided in the side surfaces of each finger where the fingers are capable of gripping hair.

**[0027]** Preferably, an embodiment of a hair clip according to the invention has fingers wherein at least the outermost fingers comprise handles adjacent the second end of the fingers. Preferably, the handles are positioned at the second end of at least the outermost fingers. More preferably, they are at the second end of each finger. Preferably, when an embodiment of a hair clip according to the invention is in use, the handles are the only part of the clip that is visible and the remainder of the clip is obscured by hair. In a preferred embodiment, the handles are removable or detachable, which allows the hair clip to be personalized, for example, by providing handles having various colors on their surface and/or a set of handles having alpha numeric characters on their surface. The characters could be used, for example, to spell a name.

**[0028]** The overall dimensions of each finger must be appropriate so that the assembled clip is not cumbersome. If the widest part of each finger is too narrow the taper to each handle is reduced, thus reducing the amount that the space between adjacent fingers can be opened. It will be appreciated that the taper from the greatest width of the fingers to the handles is in direct proportion to the distance that the finger tips open with respect to each other. Therefore, the shape and size of the handles must be appropriate; if the end of each handle is too big the fingers

do not open sufficiently. In contrast, if the end of each handle is too small, depending on the material used in the manufacture, the handle might not have sufficient strength to overcome the tension provided by the tensioning means.

[0029] Preferably, the fingers of an embodiment of a hair clip according to the invention have a certain minimum depth of at least about 5mm at their deepest, more preferably about 13mm, and the depth tapers towards both ends. It is the side surface of each finger that grips hair, therefore the depth must be optimized to provide the greatest grip. In addition, if the depth is too small it does not provide sufficient size for construction of a tunnel created by the apertures through each of the fingers for the tensioning means or an outer key/plug recess.

[0030] Preferably, the handles are of minimal length, preferably less than 20mm, more preferably less than 10mm, yet commensurate with having sufficient leverage to overcome the tension provided by the tensioning means. It will be appreciated that this does not rule out the embodiments wherein the handles are extended for mechanical or decorative purposes.

### **Brief Description of the Drawings**

[0031] A specific embodiment will now be described by way of example, with reference to the accompanying drawings in which:

- Figure 1 depicts an embodiment of a hair clip of the present invention having fingers in a closed position;
- Figure 2 depicts an embodiment of a hair clip of the present invention having fingers in an open position;
- Figure 3 shows the key side of an individual finger of an embodiment of a hair clip of the present invention;
- Figure 4 shows the slot side of the individual finger depicted in Figure 3; and
- Figure 5 is a plan view of the individual finger depicted in Figures 3 and 4.

### **Detailed Description**

**[0032]** For the purposes of clarity and a concise description, features are described herein as part of the same or separate embodiments, it will, however, be appreciated that the scope of the invention may include embodiments having combinations of all or some of these features.

**[0033]** Referring now to Figures 1 and 2, an embodiment of an assembled hair clip (1) comprises a plurality of discrete fingers (10, 11, 12), including a first outermost finger (10), a number of intermediate fingers (11) and a second outermost finger (12), held in a closed position by a tensioning means (13). In use, under the action of tensioning means, the fingers can be opened with respect to each other, as shown in Figure 2, by squeezing together the detachable finger handles (14, 15) and then closed with respect to each other, as shown in Figure 1, by releasing the finger handles.

**[0034]** As depicted in the drawings, the hair clip (1) comprises a number of individual fingers, the tips of which open relative to each other, and when closed grip material, *e.g.*, hair, between the fingers firmly. Referring now to Figures 3 and 4, it can be seen that in this specific embodiment, a key (16) comprising a semi circular cylinder is provided on one side of each of intermediate fingers (11) and on the inner side of outermost finger (12). Keys (16) are configured to fit into corresponding slots (17) defined by a semi circular cylindrical cavity located in the opposing side of each intermediate finger (11) and in the inner side of outermost finger (10). The key (16) and slot (17) together provide a hinge and assist in preventing movement in certain directions of the fingers relative to each other.

**[0035]** As can be envisioned from Figures 3 and 4, the individual fingers are assembled by pushing key (16) of a first finger into slot (17) of a second finger, ensuring that the tips (2) of each finger are adjacent to each other.

**[0036]** Referring to figure 5, the sides of each finger proximate the key and slot, taper in a direction towards the tip (2) of the finger and in a direction away from the tip (2) of the finger. A



hinge is formed with adjacent fingers because the key and slot are positioned on the fingers at the point where the sides are at their maximum distance from each other, *i.e.*, at the point of each finger's maximum width (18). Preferably, the center of each key and slot is located at this point of maximum width (18), whereby each finger is free to rotate or pivot about point (18).

[0037] It should be understood that various changes and modifications to the presently preferred embodiments described herein will be apparent to those skilled in the art. For example, it will be appreciated that the hair clip may be manufactured in a variety of alternative sizes to suit various age groups, hair types, hair styles, *etc.*. Such changes and modifications can be made without departing from the spirit and scope of the present invention and without diminishing its many advantages. As such, it is intended that such changes and modifications are encompassed by the following claims.